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## **Supplemental Material**

# **Urinary Concentrations of Parabens and Other Antimicrobial Chemicals and Their Association with Couples' Fecundity**

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**Table S1.** Unadjusted preconception antimicrobial phenolic urinary concentrations by partner, LIFE Study, 2005-2009.

Chemical (ng/mL)	All	Females	Males
	Median (IQR)	Median (IQR)	Median (IQR)
<i>Parabens</i>			
MP **	17.2 (4.03 ,67.1)	31.9 (12.0, 104)	6.55 (2.13, 26.4)
EP **	0.56 (0.21, 3.02)	1.09 (0.27, 5.62)	0.37 (0.17, 1.26)
PP **	4.63 (0.89, 21.3)	12.1 (3.54, 35.6)	1.45 (0.49, 5.55)
BP **	0.12 (0.02,1.21)	0.59 (0.08, 2.84)	0.03 (0.01, 0.17)
BzP *	0.02 (0.00, 0.04)	0.02 (0.00, 0.04)	0.02 (0.00, 0.04)
HP	0.00 (0.00, 0.00)	0.00 (0.00, 0.00)	0.00 (0.00, 0.00)
<i>Paraben Metabolites</i>			
4-HB**	551 (300, 916)	493 (269, 895)	614 (348, 920)
3,4-DHB**	33.0 (18.4, 57.3)	33.0 (18.2, 58.1)	33.0 (18.6, 57.2)
OH-MeP**	21.2 (11.5, 44.9)	21.5 (10.7, 43.7)	20.9 (12.3, 45.6)
OH-EtP**	3.92 (1.23, 12.9)	4.40 (1.41, 13.5)	3.57 (1.17, 11.8)
<i>Antibacterials</i>			
TCS	14.8 (4.02, 60.2)	11.7 (3.55, 54.2)	17.8 (4.42, 77.1)
TCC *	0.01 (0.00, 0.03)	0.01 (0.00, 0.03)	0.01 (0.00, 0.03)

Abbreviations: IQR, interquartile range; MP, methyl paraben; EP, ethyl paraben; PP, propyl paraben; BP, butyl paraben; BzP, benzyl paraben; HP, heptyl paraben; 4-HB, 4-hydroxy benzoic acid; 3,4-DHB, 3,4-dihydroxy benzoic; OH-Me-P, methyl-protocatechuic acid; OH-Et-P, ethyl-protocatechuic acid; TCS, triclosan; TCC, triclocarban.

**Table S2.** Unadjusted and adjusted fecundability odds ratios and 95% confidence intervals for preconception urinary concentrations of parabens and other antimicrobial chemicals modeled as quartiles of biomarkers of exposure in partner-specific models of estimated exposure, LIFE Study, 2005-2009<sup>a</sup>

Chemical	2nd Quartile	3rd Quartile	4th Quartile	p-trend	
	FOR (95% CI)	FOR (95% CI)	FOR (95% CI)		
<b>Unadjusted Models</b>					
<i>Females</i>					
MP	1.25 (0.90, 1.74)	0.95 (0.68, 1.33)	0.72 (0.51, 1.03)	0.03	
EP	0.87 (0.62, 1.22)	0.74 (0.53, 1.04)	0.66 (0.47, 0.93)	0.01	
PP	1.07 (0.77, 1.49)	0.88 (0.63, 1.24)	0.82 (0.59, 1.16)	0.16	
BP	0.91 (0.65, 1.27)	0.99 (0.70, 1.39)	0.77 (0.54, 1.10)	0.21	
4-HB	1.06 (0.75, 1.49)	1.11 (0.78, 1.57)	1.17 (0.83, 1.64)	0.35	
3,4-DHB	0.96 (0.68, 1.34)	1.19 (0.84, 1.67)	0.84 (0.59, 1.20)	0.56	
OH-MeP	0.94 (0.67, 1.33)	0.96 (0.69, 1.35)	0.93 (0.66, 1.30)	0.70	
OH-EtP	0.87 (0.62, 1.23)	0.89 (0.63, 1.25)	1.23 (0.87, 1.73)	0.23	
TCS	1.02 (0.72, 1.43)	0.84 (0.59, 1.20)	0.92 (0.65, 1.30)	0.44	
<i>Males</i>					
MP	1.27 (0.90, 1.81)	0.91 (0.63, 1.30)	0.92 (0.64, 1.33)	0.31	
EP	1.22 (0.87, 1.72)	1.10 (0.78, 1.56)	0.87 (0.61, 1.23)	0.33	
PP	1.00 (0.70, 1.42)	0.95 (0.68, 1.34)	0.86 (0.62, 1.19)	0.33	
BP	1.26 (0.89, 1.79)	1.45 (1.02, 2.05)	1.22 (0.85, 1.76)	0.23	
4-HB	1.04 (0.74, 1.46)	1.54 (1.08, 2.18)	1.47 (1.04, 2.08)	0.01	
3,4-DHB	1.12 (0.78, 1.60)	0.96 (0.66, 1.40)	0.91 (0.63, 1.31)	0.45	
OH-MeP	1.10 (0.79, 1.55)	0.81 (0.57, 1.15)	0.98 (0.70, 1.39)	0.55	
OH-EtP	1.10 (0.76, 1.58)	1.14 (0.79, 1.66)	1.16 (0.81, 1.66)	0.39	
TCS	1.02 (0.71, 1.47)	0.99 (0.69, 1.41)	1.08 (0.75, 1.56)	1.02	
<b>Adjusted Models<sup>b</sup></b>					
<i>Females</i>					
MP	1.15 (0.82, 1.62)	0.90 (0.64, 1.29)	0.66 (0.45, 0.97)	0.02	
EP	0.80 (0.57, 1.15)	0.66 (0.46, 0.95)	0.66 (0.46, 0.95)	0.02	
PP	0.97 (0.70, 1.36)	0.82 (0.58, 1.16)	0.76 (0.52, 1.11)	0.10	
BP	1.00 (0.71, 1.41)	0.97 (0.69, 1.37)	0.81 (0.57, 1.16)	0.25	
4-HB	1.22 (0.83, 1.78)	1.27 (0.85, 1.91)	1.36 (0.88, 2.10)	0.18	
3,4-DHB	1.00 (0.70, 1.42)	1.14 (0.78, 1.66)	0.88 (0.58, 1.34)	0.70	
OH-MeP	0.96 (0.67, 1.39)	0.96 (0.67, 1.37)	0.94 (0.66, 1.34)	0.72	
OH-EtP	0.82 (0.58, 1.18)	0.82 (0.57, 1.17)	1.11 (0.78, 1.59)	0.53	
TCS	0.94 (0.66, 1.35)	0.83 (0.57, 1.22)	0.86 (0.59, 1.25)	0.35	
<i>Males</i>					
MP	1.22 (0.85, 1.74)	0.91 (0.62, 1.34)	0.92 (0.62, 1.36)	0.39	
EP	1.11 (0.78, 1.57)	0.98 (0.69, 1.40)	0.84 (0.58, 1.21)	0.26	
PP	0.98 (0.68, 1.40)	1.01 (0.71, 1.46)	0.84 (0.59, 1.19)	0.36	
BP	1.24 (0.86, 1.78)	1.42 (0.99, 2.04)	1.15 (0.78, 1.71)	0.41	
4-HB	1.03 (0.70, 1.53)	1.42 (0.92, 2.19)	1.34 (0.86, 2.09)	0.11	

3,4-DHB	1.15 (0.79, 1.67)	0.90 (0.60, 1.34)	0.84 (0.55, 1.29)	0.28
OH-MeP	1.20 (0.85, 1.70)	0.79 (0.55, 1.15)	0.97 (0.68, 1.39)	0.40
OH-EtP	1.08 (0.74, 1.58)	1.15 (0.77, 1.70)	1.06 (0.72, 1.55)	0.72
TCS	0.97 (0.66, 1.41)	0.95 (0.65, 1.38)	1.02 (0.69, 1.51)	0.95

Abbreviations: FOR, Fecundability odds ratios; MP, methyl paraben; EP, ethyl paraben; PP, propyl paraben; BP, butyl paraben; 4-HB, 4-hydroxy benzoic acid; 3,4-DHB, 3,4-dihydroxy benzoic; OH-Me-P, methyl-protocatechuic acid; OH-Et-P, ethyl-protocatechuic acid; TCS, triclosan.

<sup>a</sup> In all models, the 1<sup>st</sup> quartile is the reference for quartile comparisons.

<sup>b</sup>Cox proportional odds models were adjusted for age, creatinine, BMI ( $25 \leq \text{BMI} < 30$ ,  $30 \leq \text{BMI} < 35$ , and  $\geq 35 \text{ kg/m}^2$  compared with  $\text{BMI} < 25 \text{ kg/m}^2$ ), smoking status (cotinine dichotomized at a threshold of 10 ng/mL), race/ethnicity (dichotomized, Non-White vs. White) and income (dichotomized at \$70,000).

**Table S3.** Unadjusted and adjusted fecundability odds ratios and 95% confidence intervals for preconception urinary concentrations of parabens and other antimicrobial chemicals modeled as quartiles of biomarkers of exposure in couple-based models of estimated exposure, LIFE Study, 2005-2009<sup>a</sup>.

Chemical	2nd Quartile FOR (95% CI)	3rd Quartile FOR (95% CI)	4th Quartile FOR (95% CI)	p-trend
Unadjusted Models				
<i>Females</i>				
MP	1.27 (0.91, 1.77)	0.96 (0.68, 1.35)	0.75 (0.51, 1.10)	0.06
EP	0.84 (0.59, 1.18)	0.73 (0.52, 1.04)	0.67 (0.46, 0.97)	0.02
PP	1.09 (0.78, 1.53)	0.91 (0.64, 1.29)	0.85 (0.59, 1.22)	0.24
BP	0.88 (0.63, 1.24)	0.93 (0.65, 1.32)	0.71 (0.48, 1.04)	0.11
4-HB	1.02 (0.72, 1.45)	1.02 (0.71, 1.46)	1.06 (0.75, 1.50)	0.73
3,4-DHB	0.96 (0.68, 1.36)	1.19 (0.84, 1.68)	0.86 (0.60, 1.23)	0.62
OH-MeP	0.95 (0.67, 1.35)	0.99 (0.70, 1.39)	0.95 (0.67, 1.34)	0.80
OH-EtP	0.86 (0.61, 1.21)	0.87 (0.61, 1.23)	1.21 (0.84, 1.74)	0.33
TCS	1.00 (0.71, 1.42)	0.81 (0.56, 1.18)	0.87 (0.59, 1.28)	0.31
<i>Males</i>				
MP	1.30 (0.91, 1.85)	0.96 (0.67, 1.39)	0.98 (0.67, 1.44)	0.65
EP	1.26 (0.89, 1.78)	1.21 (0.84, 1.72)	0.99 (0.68, 1.45)	0.94
PP	0.99 (0.69, 1.42)	0.97 (0.68, 1.38)	0.89 (0.62, 1.26)	0.54
BP	1.25 (0.88, 1.77)	1.53 (1.06, 2.19)	1.31 (0.89, 1.94)	0.13
4-HB	1.03 (0.73, 1.46)	1.53 (1.07, 2.19)	1.45 (1.02, 2.07)	0.01
3,4-DHB	1.12 (0.78, 1.61)	0.96 (0.66, 1.41)	0.94 (0.64, 1.36)	0.49
OH-MeP	1.10 (0.79, 1.55)	0.81 (0.57, 1.16)	0.99 (0.70, 1.41)	0.60
OH-EtP	1.10 (0.76, 1.59)	1.16 (0.79, 1.70)	1.08 (0.74, 1.58)	0.58
TCS	1.06 (0.73, 1.55)	1.05 (0.71, 1.53)	1.18 (0.78, 1.78)	0.46
Adjusted Models <sup>b</sup>				
<i>Females</i>				
MP	1.16 (0.81, 1.65)	0.89 (0.62, 1.27)	0.63 (0.41, 0.96)	0.01
EP	0.75 (0.52, 1.09)	0.67 (0.46, 0.98)	0.68 (0.45, 1.02)	0.05
PP	0.99 (0.70, 1.40)	0.83 (0.57, 1.19)	0.72 (0.48, 1.07)	0.06
BP	0.96 (0.68, 1.37)	0.88 (0.61, 1.26)	0.74 (0.50, 1.10)	0.13
4-HB	1.16 (0.79, 1.72)	1.17 (0.77, 1.78)	1.18 (0.76, 1.83)	0.46
3,4-DHB	0.99 (0.67, 1.45)	1.15 (0.77, 1.72)	0.88 (0.57, 1.35)	0.68
OH-MeP	0.93 (0.65, 1.34)	0.94 (0.65, 1.36)	0.96 (0.66, 1.39)	0.78
OH-EtP	0.78 (0.54, 1.13)	0.76 (0.53, 1.10)	1.09 (0.74, 1.60)	0.71
TCS	0.95 (0.66, 1.38)	0.82 (0.54, 1.23)	0.83 (0.53, 1.30)	0.33
<i>Males</i>				
MP	1.27 (0.88, 1.83)	0.94 (0.63, 1.40)	1.02 (0.67, 1.57)	0.81
EP	1.13 (0.78, 1.63)	1.02 (0.70, 1.49)	0.92 (0.61, 1.39)	0.59
PP	1.04 (0.71, 1.50)	1.08 (0.75, 1.56)	0.91 (0.62, 1.33)	0.7
BP	1.22 (0.84, 1.78)	1.47 (0.99, 2.17)	1.22 (0.80, 1.85)	0.31
4-HB	0.99 (0.66, 1.47)	1.34 (0.85, 2.11)	1.26 (0.80, 1.99)	0.18
3,4-DHB	1.16 (0.79, 1.70)	0.91 (0.60, 1.37)	0.89 (0.58, 1.38)	0.38

OH-MeP	1.20 (0.83, 1.72)	0.78 (0.53, 1.14)	0.96 (0.66, 1.39)	0.41
OH-EtP	1.07 (0.71, 1.60)	1.18 (0.77, 1.81)	1.00 (0.66, 1.51)	0.84
TCS	1.12 (0.74, 1.69)	1.04 (0.68, 1.58)	1.21 (0.76, 1.92)	0.49

Abbreviations: FOR, Fecundability odds ratios; MP, methyl paraben; EP, ethyl paraben; PP, propyl paraben; BP, butyl paraben; 4-HB, 4-hydroxy benzoic acid; 3,4-DHB, 3,4-dihydroxy benzoic; OH-Me-P, methyl-protocatechuic acid; OH-Et-P, ethyl-protocatechuic acid; TCS, triclosan.

<sup>a</sup> In all models, the 1<sup>st</sup> quartile is the reference for quartile comparisons.

<sup>b</sup> Cox proportional odds models were adjusted for female age, difference between partners' age, both partner's: creatinine, BMI ( $25 \leq \text{BMI} < 30$ ,  $30 \leq \text{BMI} < 35$ , and  $\geq 35 \text{ kg/m}^2$  compared with  $\text{BMI} < 25 \text{ kg/m}^2$ ), smoking status (cotinine dichotomized at a threshold of 10 ng/mL), race/ethnicity (dichotomized, Non-White vs. White), income (dichotomized at \$70,000) and partner's continuous concentrations of urinary biomarkers.